



Department
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School leadership evidence review: using research evidence to support school improvement

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1. Introduction

1.1. Purpose of the review

The importance of using research evidence to inform professional practice and organisational decision-making is increasingly recognised across a range of contexts. Studies comparing research use by professionals have tended to conclude that educationalists are less likely to use research literature than other professional groups – particularly some health professionals (Hannan et al., 2000). In 1996, Hargreaves suggested that teachers could learn from the medical profession in making better use of evidence. Ten years on, Petty (2006) argued that teaching should be led less by custom and practice, or current fashion, and more by evidence from research. Other researchers have pointed out that teachers and school leaders **do** use research provided it is relevant to their needs (Levin et al., 2011; Biddle and Saha, 2006; Cordingley, 2009).

The assumption underlying these debates is that research has a useful role to play in informing practice in schools and can contribute to school improvement. If this assumption is correct, it follows that school leaders can play a critical role in making schools evidence-based by using research themselves to inform their own decision-making, by promoting research use more widely within their school and by involving their school in studies which contribute to the evidence base in education (see Goldacre, 2013).

The purpose of this review is therefore twofold: first, to review the available evidence on how research can contribute to school improvement; and second, to explore whether and how school leaders use and promote research evidence.

1.1.1 Structure

The review is set out in the following sections:

- **What is research evidence and how can it be used?** In this section we start by clarifying what we mean by research evidence and consider how different research can be used to address different questions of relevance to school improvement.
- **Why is research important for school improvement?** In this section we summarise what the literature can tell us about why evidence matters for school improvement and what we know about whether and how evidence is used in schools.

- **What are the barriers and facilitators to using evidence?** Here we summarise the research on barriers and facilitators to evidence in education and consider what can be learned from other sectors.
- **What is the role of leadership in creating an evidence informed school?** In this section we consider what role school leaders and the wider system play in promoting research use.
- **A summary of leadership strategies for building an evidence-informed school.** In the final section we summarise the implications of the review for school leaders who wish to be evidence-based.

2. What is research evidence and how can it be used?

2.1 Types of evidence

In general use, 'research' is a term that can be used to encompass a wide range of formal and informal information gathering. However, to provide 'research evidence', research needs to be both systematically conducted and appropriately disseminated. The Higher Education Funding Council for England has defined research as 'a process of investigation leading to new insights effectively shared' (HEFCE, 2011), and, in their study of research use by school principals, Hemsley-Brown and Oplatka (2005) use the following definition of research:

Empirical work carried out by others and reported in the public domain e.g. published research findings and theories that emerge from research findings; and empirical work carried out by managers and practitioners for their own use – but also disseminated to others (as opposed to work carried out entirely for their own use).

Hemsley-Brown & Oplatka, 2005:5

Research is not the only form of evidence relevant to schools and school leaders. In the real world decisions are influenced by a whole range of factors, with evidence from research often playing a relatively minor role (Trinder & Reynolds, 2000). Indeed, some have criticised a too-narrow interpretation of evidence-based practice, arguing that too great an emphasis on research evidence can exclude valuable insights derived from other sources, such as practice experience (Miller & Pasley, 2012) and under-estimate the importance of professional judgement (Biesta, 2007).

It has also been suggested that an overreliance on research findings can underplay the significance of cultural and contextual differences between schools (Faubert, 2012) and the challenge of distinguishing those findings that can be universally applied from those that need to be adapted to suit specific contexts. The fact that research evidence can be used alongside other forms of evidence – including knowledge of local, or context specific issues and the extensive data collected by schools themselves - is rarely emphasised in the literature. This may be a significant omission at a point when many schools are becoming increasingly sophisticated in their use of data to inform decision making and achieve school improvement (e.g. Ofsted, 2012), but perhaps remain less engaged with research.

In the social care field, organisations established to support and encourage the use of evidence (such as the Social Care Institute for Excellence (SCIE) and the Centre

for Excellence and Outcomes) tend to use the term 'knowledge' to denote a wider range of evidence sources than just research. In 2003, SCIE published a typology by Pawson et al. (2003) which identified five sources of knowledge, relevant to social care, but which could be similarly applied to the field of education:

- Organisational knowledge
- Practitioner knowledge
- User knowledge
- Research knowledge
- Policy community knowledge

Pawson et al. argue that all of these have a vital role to play as part of an evidence base, and that there is no hierarchy of knowledge, although users of knowledge need to understand that some types of knowledge are more relevant to some purposes than others, and be aware of the quality and reliability of the knowledge.

Research evidence has a particular value in this regard - as systematic and rigorous research provides explicit evidence which can be assessed objectively. Well conducted studies and syntheses of research can provide high quality and reliable evidence and draw on other sources of knowledge (Levin, 2004). Furthermore, there is a strong argument for asserting that there **is** a hierarchy of knowledge when it comes to understanding what works, where well designed and executed research does provide more reliable evidence than other kinds of knowledge (Goldacre, 2013).

However, not all research addresses the same kinds of questions, and different kinds of studies provide evidence relevant to different aspects of school improvement. Research can help to:

1. **Identify needs and issues**, including the causes and correlates associated with the achievement of student populations. Examples include studies drawing on national population samples showing, for example, the associations between social class and attainment (e.g. Feinstein, 2004); or smaller scale studies to provide insights into the needs of particular groups, such as traveller children (Bhopal, 2004)). An evidence-based school leader might use such research evidence to inform the development of appropriate strategies to support the learning of their particular student population.
2. **Provide evidence for what works**, including research on what interventions are more or less successful in meeting the learning needs of students. Examples include studies on the effectiveness of particular programmes (e.g. the evaluation of Every Child a Reader (Tanner et al., 2011)). An evidence-

based school leader might use such research evidence to ensure that their school is implementing the programmes which are known to be most effective.

3. **Assess progress towards a school's improvement**, including evaluations of the outcomes of a school's learning programmes conducted either in-house or in partnership with others. An evidence-based school leader might make use of evaluations alongside other performance data to review their school's improvement.

All three of these are important to the evidence-based school leader, although it is most often the second (what works) type of research that is being referred to when evidence based practice is being discussed. Here too, there are different kinds of research studies, some of which provide stronger findings than others. The classic hierarchy of research evidence summarised below (table 1) by Evans (2003) has the randomised controlled trial (RCT) as the 'gold standard' for measuring effectiveness, topped only by studies repeated in several centres and systematic reviews of research, because the findings of these have been derived from multiple populations, settings and circumstances. However, research has a role not only in measuring the effectiveness of an intervention but in assessing its appropriateness from the perspective of those on the receiving end, and its feasibility in terms of whether and how it can be delivered. Evans points out that for research questions addressing issues other than effectiveness, different methods will be needed and 'the optimal research method will be determined by the type of question, and it is the method that produces the most valid evidence that should become the standard to which others are compared' (Evans, 2003:82). In other words this is an issue of 'horses for courses' - what kind of research is 'best' depends on what kinds of questions one is seeking to find answers to.

Evans refers to a hierarchy of evidence when writing about health care, but similar arguments can be applied to education. Goldacre (2013) argues that for education to become evidence based there needs to be more emphasis on the RCT. At the same time he recognises the value of qualitative research for generating questions about what might work (to be tested by trials) and understanding why an intervention works (or not). Many RCTs are conducted in conjunction with qualitative research in order to generate both kinds of evidence on the same topic and Gorard (2007) argues that this combined approach is particularly important within education research. An example is a recent study of a school-based teenage pregnancy prevention programme which combined an RCT to test the validity of the intervention alongside qualitative work to assess the fidelity of its implementation and the acceptability of the programme to young people, parents and schools (Jessiman et al., 2012 and Maisey et al., 2012).

Table 1: Hierarchy of evidence: a framework for ranking evidence evaluating healthcare interventions

	Effectiveness	Appropriateness	Feasibility
Excellent	<ul style="list-style-type: none"> ▪ Systematic review ▪ Multi-centre studies 	<ul style="list-style-type: none"> ▪ Systematic review ▪ Multi-centre studies 	<ul style="list-style-type: none"> ▪ Systematic review ▪ Multi-centre studies
Good	<ul style="list-style-type: none"> ▪ RCT ▪ Observational studies 	<ul style="list-style-type: none"> ▪ RCT ▪ Observational studies ▪ Interpretive studies 	<ul style="list-style-type: none"> ▪ RCT ▪ Observational studies ▪ Interpretive studies
Fair	<ul style="list-style-type: none"> ▪ Uncontrolled trials with dramatic results ▪ Before and after studies ▪ Non-randomized controlled trials 	<ul style="list-style-type: none"> ▪ Descriptive studies ▪ Focus groups 	<ul style="list-style-type: none"> ▪ Descriptive studies ▪ Action research ▪ Before and after studies ▪ Focus groups
<ul style="list-style-type: none"> ▪ Poor 	<ul style="list-style-type: none"> ▪ Descriptive studies ▪ Case studies ▪ Expert opinion ▪ Studies of poor methodological quality 	<ul style="list-style-type: none"> ▪ Expert opinion ▪ Case studies ▪ Studies of poor methodological quality 	<ul style="list-style-type: none"> ▪ Expert opinion ▪ Case studies ▪ Studies of poor methodological quality

From Evans, 2003

1.2 How research evidence can be used

Just as there are different kinds of research to address different kinds of questions, there are also different kinds of research use. Walter et al. (2003) make a distinction between the 'conceptual' use of research, which brings about changes in levels of understanding, knowledge and attitude, and 'instrumental', or direct, use, which results in changes in practice. It is the latter which some authors refer to as 'knowledge sharing' (Fullan, 2002) or 'knowledge mobilization' (Campbell & Levin, 2012).

A number of authors (Furlong & Sainsbury, 2005; Bell, et al., 2010) have differentiated between practitioners making use of research produced by others, and being actively involved as producers of research evidence themselves. For example, Bell et al. (2010) describe engaging **with** research as practitioners using publicly available evidence, interpreting it and adapting it to their own contexts. They describe practitioners as engaging **in** research when they carry out their own enquiries that: address a research question; use instruments (observation and interview schedules etc) to enable them to explore the effects of an intervention; and analyse and report on the evidence collected.

Bell et al. (2010) also highlight a spectrum of research engagement. At one end, there is research which is largely researcher led (i.e. schools involved in studies which are entirely planned, analysed and reported by academic researchers with practitioners, such as teachers, involved in implementation, data collection and review). At the other end, there is research wholly planned, implemented and analysed by practitioners, usually with support from external researchers.

Levin (2010) sounds a note of caution about practitioners' involvement in research observing that teachers are unlikely to have the time to undertake high quality primary research, may lack a background in research methods, and that large scale engagement of practitioners as researchers is hardly practical across an entire education system. These factors can lead to badly designed studies which can produce misleading results. Even when this is not the case, it makes little sense for large numbers of teachers to spend many hours coming to conclusions that may already be well-known from robust, large-scale studies. Moreover, any research project is likely to relate to a particular topic, while schools need to engage with relevant research on all aspects of their work. These comments are echoed by Goldacre (2013) who points out that although teacher-led research studies have their place '...in reality the projects often turn out to be too small, being run by one person in isolation, in only one classroom, and lack the expert support necessary to ensure a robust design'. (Goldacre, 2013:17)

However, Davies (1999) suggests that a school wishing to use evidence to improve practice needs both to utilise evidence from world-wide research and literature on education; and to establish sound evidence themselves, by systematically collecting information about particular phenomena. Bell et al.'s (2010) review suggests that these two levels are often inter-linked: practitioners who engage in research themselves also engage with published research which they use to stimulate or inform their own research activities.

An implication of Goldacre's recent report is that there is a third level of research engagement by schools which involves their participation in studies that are bigger and more rigorously conducted than is possible through research carried out in a single school. This involvement is currently being encouraged by a new government sponsored scheme (Closing the Gap: Test and Learn) which will provide grants through the National College for Teaching and Leadership to Teaching Schools to cover the costs of teacher involvement in testing interventions. The Education Endowment Foundation (EEF)¹ is also funding a range of new RCTs within education and offers participating schools an opportunity to contribute to the evidence-base more broadly.

What is absent from the literature is any discussion of the use schools can, and increasingly do, make of their own data e.g. data generated by formative and summative assessment or benchmarking data. This may be because the literature has mostly been written by education academics who have assumed that the evidence-base for evidence-based practice will be primarily academic research augmented by some practitioner led research in the same style. However, as a recent Ofsted report on how headteachers achieve school improvement has highlighted, developing effective monitoring systems based on school level data is critically important for identifying issues, assessing need and evaluating the impact of changes in school policies and practices (Ofsted, 2012). The use of such data would not usually be referred to as 'research' but it is a crucial source of evidence for school leaders.

¹ <http://educationendowmentfoundation.org.uk>

2. Why is research important for school improvement?

2.1 The role of research in school improvement

Research matters for school improvement at a number of levels. At a **national** level it can provide evidence on which government education policies are more or less likely to be effective. At a **whole school** level research can indicate what works in general or for particular populations of pupils e.g. those on free school meals or students with a statement of SEN. At an **individual** level it can provide evidence on what teaching methods are likely to work best with specific students.

Levin (2010) provides examples of research having impacted on education policy, citing research that showed student potential was not fixed as having contributed to improvements in the educational opportunities of girls, ethnic minority students and those with disabilities. Research on the variance of results among schools with very similar student populations (OECD, 2001) has focussed policy and practice on reducing such variability. However, Levin also points out that not all research evidence is equally attended to. For example, decades of research show poor effects of 'grade retention' (being held back a year in order to catch up with peers). This is now uncommon in the UK but is still widely practiced in other countries (Field et al., 2007). Neuroscientist, Howard-Jones (2011) similarly provides examples of false beliefs held by teachers and champions the role of research in challenging such myths.

At both a national policy and school level, research can identify what makes the most difference to student outcomes and help define priorities, focus and investment. For example, as a school based influence on outcomes, leadership has been shown to be second only in significance to classroom teaching (Qian & Walker, 2012). Leithwood (2007), for instance, notes that while leadership explains 5-7 per cent of the variation in student learning between schools, it actually accounts for one-quarter of all school based variation after factors such as student background are excluded. Such findings have had considerable influence on strategies intended to improve the performance of struggling schools and have focussed attention on leadership development.

Research can play a part in improving outcomes for students in two main ways. First, it can inform teaching practice and school policy, support innovation and help teachers and school leaders address key educational issues. Examples include research on the most effective methods of literacy development, motivating and engaging disaffected students and whole school approaches to bullying. Second,

evidence can be used to monitor progress towards the outcomes and development of individuals, groups and cohorts, the effectiveness of policies and programmes and the performance of schools (ACT, 2007).

Any school improvement strategy requires effective evidence use and data analysis—so that change can be charted and the strategy adjusted in the light of its effects (Kaufman et al., 2006). Reliable measurement of processes and outcomes variables is essential to continuous improvement strategies (Morris & Hiebert, 2011).

3.2 Can research use contribute to school improvement?

There is good evidence that teacher quality is the most important school-based factor for pupil learning and attainment (Barber & Mourshed, 2007; Slater, Davies & Burgess, 2009; Day et al., 2006). Meta-analyses indicate that whilst 50 per cent of the variation in student achievement is attributable to their prior cognitive abilities, around 30 per cent is attributable to teaching variables. What teachers do in the classroom matters more than non-teacher factors such as class size and school organisation (Atherton, 2011; Hattie, 2009; Marzano et al., 2001). If research use can be shown to impact positively on teaching, it then demonstrably contributes to school improvement.

There is good evidence that research use can impact positively on teaching practices. Bell et al. (2010) conducted a systematic review of practitioner engagement in and/or with research and its impact on learners. Their synthesis included 25 studies in education and they concluded that there was ‘strong evidence from these studies of links between teacher engagement in and with research and significant changes in practice with a positive impact on student outcomes.’ (2010:2). Impacts on learners included improvements in knowledge and skills, behaviour for learning, and attitudes/motivation for learning. Research engagement was shown to contribute to teachers selecting new approaches to their practice based on the evidence of what is effective. Bell et al. particularly emphasise the value to teachers of being engaged with research that focuses on student learning needs, with the most powerful element of the process being the assessment of whether any changes in practice were having the desired impact on student outcomes.

A study by the National Teacher Research Panel (NTRP, 2006a) identified that practice can be improved through teachers using research to update their knowledge, evaluate their approaches to teaching and introduce new resources and schemes of work. Specific examples included adopting new approaches to assessment, strategies for revision classes and the transition from primary to secondary school. Furlong and Sainsbury (2005) highlight the value of research engagement for teachers’ learning and morale. Downing et al. (2004) found that

teacher engagement in research had positive impacts on the wider school community, by encouraging dialogue between teachers, support staff, leaders and governors.

3.3 What do we know about whether and how evidence is used?

Studies of the extent of research engagement by teachers paint a mixed picture (Rickinson, 2005). Hobson et al. (2009) found that only 31 per cent of student teachers thought that awareness of research findings about effective teaching methods was 'very important'. However, Rickinson (2005) reports a 2004 MORI survey of primary and secondary school teachers found that 42 per cent reported frequently using research to inform their professional development or classroom practice, with just five per cent reporting that they never used research. Poet et al.'s (2010) survey of teachers in England found that a third of those surveyed had undertaken their own research and enquiry to improve their practice in the previous 12 months, and 61 per cent of teachers responding to the survey said they knew where to access research findings. Neither of these studies, nor any others we reviewed, attempted to find out about the type, quality and robustness of research either accessed or undertaken.

Teacher attitudes to the potential contribution of research to practice improvement have been found to vary by role, seniority, teacher characteristics and by terms of employment and school-related factors (Poet et al., 2010). More senior teachers, older and part-time teachers tended to have more positive attitudes towards the value of research, as did teachers from schools with higher proportions of pupils with Special Educational Needs. Poet et al. suggest that teachers who are more established in their profession, and/or have more time, and/or have the motivation to share learning about the needs of particular groups of pupils may be more likely to have positive attitudes towards research.

Cordingley (2009) argues that teachers have become more research aware due to the increased emphasis on the importance of evidence in education in recent years. She argues that the focus has shifted from simply disseminating research findings to getting them embedded into practice.

School leaders are also well aware of the importance of evidence. Research conducted by Day et al in 2010 identified that 'encouraging the use of data and research' was the action or strategy most frequently identified by head teachers as leading to improved outcomes. It was cited by 34 per cent of secondary head

teachers –above teaching policy and practice, assessment procedures, resource allocation and school culture.

However, awareness of research does not necessarily translate into practice change. Campbell and Levin (2012) cite examples from health research to demonstrate that even the most powerful evidence sometimes has only limited effect. They point out that it took over 40 years from the first strong evidence on the ill-effects of smoking to any tangible impact on policy.

A study by Levin (2010) also reported a considerable gap between the importance leaders attached to using research and the actual practices identified. A review of research use in US school districts (Coburn et al, 2009) found only a modest role for research in informing decisions. Research played no role at all in a quarter to a third of the instances reviewed. Levin (2010) concludes:

Although the evidence remains limited, a fair conclusion might be that educators, like other professionals, are interested in research, spend relatively little time on learning about research directly, rely primarily on intermediaries as their knowledge sources, and connect research in various ways and to varying degrees to the tasks and challenges facing them.

Levin, 2010:308

There is currently increased interest in how schools can become more evidence based, both by improving the evidence base available to schools and, where good evidence already exists, getting the findings implemented. As Kevan Collins, Chief Executive of the Education Endowment Foundation, points out, even when research evidence is clear, it does not necessarily influence decision making in schools (Collins, 2013). He cites the example of teachers' top priorities for Pupil Premium spending for the current academic year (see foreword to Campbell & Levin, 2012). Fewer than three per cent of teachers identified the most cost-effective classroom approaches despite research indicating that, if implemented well, these approaches could substantially improve pupils' performance (Cunningham & Lewis, 2012). In the next section we consider what barriers might contribute to this lack of evidence use and how they might be overcome.

4. What are the barriers and facilitators to using evidence?

Concerns about the gap between research and practice in education are not new. There has long been debate about the lack of research use (and what to do about it). Castle (1988) suggested ways of facilitating research use including making information readily available; enabling teachers to devote time to reading research; use of outside consultants; providing evidence of the benefits of using research; ensuring that research had practical application; and the promotion of a collegial atmosphere between researchers and teachers. Ten years on, Hillage et al. (1998) identified barriers to research use in education including the limited use of journals, inaccessibility of research, the low priority given to sharing research findings with end-users and the lack of time and support to help schools to use research. More recent research has highlighted similar factors influencing teachers' use of research:

- **Access:** The way research is communicated is a key factor. Hemsley-Brown and Sharp (2003) found that teachers could be deterred from using research because of too much jargon or high-level statistics. Other studies have found that publication format, the sheer volume of research or a lack of skill/confidence to access research findings were factors in teachers' likelihood to engage with research (e.g. Wilson, 2004; CUREE, 2007; Poet et al., 2010). Wilson's research found that teachers had successfully been made aware of research through summaries, newsletters, website links, conferences and training.
- **Relevance:** teachers are more likely to access and use research evidence that they perceive as focused on teaching and learning and/or is viewed as relevant to improving practice (Cordingley, 2000; NTRP, 2006a). Factors include the research being convincing, in line with a teacher's professional judgement and able to be generalised to different contexts (Ratcliffe, 2003).
- **Credibility:** is increased when a range of evidence and methods are clearly described and where the conclusions drawn are realistic (Cordingley, 2000). Studies have found that evidence presented in the form of case studies based on real classroom settings, where teachers have been active partners in the research, are key features lending credibility to research (e.g. Cordingley, 2000 Ratcliffe, 2003).
- **Engagement:** A study by the NTRP (2006b) concluded that teachers were more motivated to use research where they were more actively involved: where they were treated as professional people, capable of thinking and enquiring for themselves, rather than simply implementing the latest

requirements; or where they were part of a research group enabling professional dialogue and exchange.

- **Usability:** translating research findings into useable practices has been identified as important by teachers in several studies (Cordingley, 2000; Hemsley-Brown & Sharp, 2003).
- **Time, skills and confidence:** Davies (1999) suggests that in order to make use of research, educationalists at all levels need to be able to: pose an answerable question about education; know where and how to find evidence systematically and comprehensively using the electronic (computer-based) and non-electronic (print) media; retrieve and read such evidence competently and undertake critical appraisal and analysis of that evidence according to agreed professional and scientific standards; organise and grade the power of this evidence; and, determine its relevance to their educational needs and environments. For many teachers, this is a tall order, both in terms of the time required and the skills and confidence. Poet et al. (2010) found that 58 per cent of teachers lacked the time to do their own research and 43 per cent did not have the time to use other people's research. Around half said they had been unable to understand and use the research produced by others.
- **Organisational support:** Poet et al. (2010) found that only 24 per cent of teachers felt that their school encouraged them to use research findings to improve their practice; just 23 per cent felt encouraged to undertake their own enquiry.

Similar barriers and facilitators to research use have been identified by studies focusing specifically on school leaders. UK studies have concluded that key barriers to research use are: accessibility and relevance of research; trust and credibility; the gap between researchers and users, and organisational factors, including a reluctance to take on new ideas in the context of other pressures (Hemsley-Brown, 2004; Wilson et al. 2003). These findings are reflected internationally. Biddle and Saha's (2006) study of school principals' attitudes towards educational research in the USA and Australia found perceived irrelevance of research, lack of time to read it and poor communication of findings were barriers to research use.

Barriers to research use are not unique to schools. Despite the widely held view that research evidence has a greater purchase within healthcare, a number of studies have shown that here too there are barriers. Funk et al.'s scale (1991) was originally devised to assess the barriers to research use by nurses, and has been used in a number of studies to identify a range of factors pertaining to healthcare professionals such as lack of time to read research and to implement new ideas (e.g. Dunn et al., 1998; Retsas, 2000). In the context of the NHS, Allen et al. (2007) found the following reasons why research evidence can be difficult to use:

- It does not always address questions that decision makers need answered. This may be because the commissioners of research and the researchers themselves do not have a full understanding of the issues currently facing decision makers. Issues which interest researchers may not be of current concern to those who could use the evidence.
- Even if the research does address issues that were or still are important to potential research users, it may not be timely. The time needed for undertaking rigorous empirical studies is often longer than potential users can wait for the answer they need.
- The results of the research may be expressed in such a way that it is difficult for potential users to pick up on the messages relevant for their circumstances. This is partly because researchers often write in a different, more theoretical and generalisable language than that used by people faced with current practical problems. Serious time constraints are also likely to apply to busy managers, making it difficult for them to read lengthy documents reporting research findings.
- For many potential research users, the day-to-day pressures of running a financially viable organisation and responding to other national targets are likely to override any desire to make decisions about how services are run using formal research-based evidence.

Hemsley-Brown and Oplatka (2005) used an adapted version of the Barriers Scale devised by Funk et al., (1991) to examine school principals' perceptions of barriers to the use of research in England and Israel. In both countries, the key barriers to research use for principals were perceived to be aspects of 'the research itself' including the view that research findings were not readily available, understandable, or clear about the implications for practice. The researchers identified limited time, relevance and fitness for purpose and lack of encouragement or support as barriers to research use. Principals frequently perceived research as producing contradictory results and, in England, principals particularly expressed the concern that research evidence needed to fit within the measurement culture of the school. English principals also highlighted political and personal reasons for not using research evidence. Political barriers related to government pressure and a perception of top-down decision-making, limiting their scope for implementing ideas from their own research or evidence from elsewhere. They also highlighted concerns that they personally were not sufficiently research literate to interpret findings from research or to translate the evidence for their school. Pre-service training and continuing professional development were highlighted as facilitators to research use as was collaboration between researchers and school leaders. Principals from England believed that using research could contribute to change, provided research was also valued by those who monitored and inspected schools.

Hemsley-Brown and Oplatka (2005) suggest that some barriers to research use are even greater in education than in other contexts because of the 'uncertain, ambiguous nature of teaching and schooling that makes it difficult for researchers to identify clear, valid principles and findings based on hard evidence' (2005:24). They conclude that research utilisation in 'uncertain' social science professions (e.g. law, social work and education), is likely to be lower than in more 'structured' occupations such as healthcare (nursing and medicine).

5. What is the role of leadership in creating an evidence informed school?

5.1 The role of school leaders

There is general recognition of the central role of leadership in improving schools (Day *et al.*, 2009). The literature on effective ‘turnarounds’ repeatedly points to the importance of effective leadership and there is evidence that talented leadership is one of the strongest explanations for the success of schools performing beyond expectations in high poverty settings (Harris & Chapman, 2002). Day *et al.* (2009) describe the core practices of leaders in successful schools. They actively set directions, develop people, and engage in organisational redesign. They create the conditions that allow improvement to be sustainable and they are able to develop and adjust their leadership practices to align with the needs of the organisation.

The use of research evidence can contribute to school improvement, but it needs leadership in order for this to occur. Coburn and Talbert (2006) argue that school leaders play a key role in fostering or deterring the use of research. Indeed, it is only when leaders make it a priority that schools can become evidence-based. Campbell and Levin (2012) argue that the focus of attention on the individual teacher as the ‘user’ of research is misplaced. They describe this notion of ‘applying’ research as ineffective in spreading and sustaining practice change, and argue instead for a more multi-dimensional approach to developing collective and organisational capacity to spread the use of evidence. Similarly, Hemsley-Brown (2004) points out that:

The conclusions from empirical research, in both education and nursing, confirm that the main barriers to knowledge use in the public sector are not at the level of individual resistance but originate in an institutional culture that does not foster learning

Hemsley-Brown, 2004:462

5.3.1 Establishing a learning culture

School leaders play a critical part in fostering learning by creating and supporting a learning culture. A UK review concluded that ‘research is more readily integrated into school life when systems are in place to enable the school to operate as a learning organisation’ (CUREE, 2003:5).

Furthermore, evidence suggests that the dimension of leadership which matters most for student outcomes is leaders’ professional development of their staff. An

evidence review carried out by Robinson, Hohepa and Lloyd (2009) identified eight dimensions of leadership practices and activities linked to student outcomes. Of all the activities identified, head teachers' leading and actively participating in professional learning and development had the largest impact on student outcomes: an effect size twice that of the next most important contributory factor - planning, coordinating and evaluating teaching and the curriculum.

Robinson, Hohepa and Lloyd (2009) point out that leaders promote and participate in teachers' professional learning in two main ways: first, they place a strong focus on teaching and learning and, second, they learn more about what teachers are up against, and give them support in making changes required to embed their learning in their daily practice. Robinson et al highlight the importance of leaders engaging in 'constructive problem talk' - identifying issues and fostering a collective, constructive approach to problem-solving as an effective school improvement strategy. School leaders being engaged with research themselves and encouraging their staff to be research-engaged is an integral part of the process. This can be in formal contexts such as staff meetings and professional development sessions, or informally through discussions about specific teaching problems.

Opfer and Pedder's analysis (2011) of the influences on the effectiveness of teacher professional development for improving schools in England similarly indicated that school factors were more important than individual teacher factors in influencing learning and improvement, with better systems for professional development being observed in high performing schools.

5.3.2 Establishing support systems

In recent years, schools have increasingly looked inwards to address their professional learning needs (e.g. Garet et al., 2001; Mitchell et al., 2010). Approaches such as coaching, mentoring, professional learning communities and action research have grown more common place over the last decade (e.g. Hayes et al., 2006; Stoll et al, 2006). Increases in the degree of autonomy afforded to schools in many areas of operation, coupled with significant reductions in school budgets as part of a broader climate of austerity, mean that this trend seems likely to continue. In England, these various developments have collectively led to the establishment of Teaching Schools² (with one of their key objectives being engagement in research and development) as well as school to school support and partnerships between

²

<http://www.education.gov.uk/nationalcollege/docinfo?id=150813&filename=teaching-schools-fact-sheet.pdf>

schools, universities and other providers, responsible for the provision of professional learning to teachers and leaders at all stages of their career.

A number of writers have made connections between learning organisations and the use of research. In its simplest terms, a learning organisation relates to any institution which promotes an ethos of ongoing learning and development amongst its staff as part of a commitment to continuous quality improvement. The valuing of data and evidence forms a key component of learning organisations (Revans, 1983; Dixon, 1994).

Cordingley (2012) suggests that the key components of professional learning include: the availability of specialist expertise; structured peer support; professional dialogue based on trying out new things and focusing on why things do/don't work as well as how they work; sustained enquiry-oriented learning over (usually) two terms or more; learning from observation of others' practice; setting ambitious goals in the context of aspirations for pupils; the use of tools/protocols to help evidence collection and analysis.

Cordingley (2012) also argues that school factors are critical and suggests that effective staff learning environments: encourage collaboration as a sustained learning strategy at every level; enable the collection and use of evidence about processes as well as outcomes to link staff and pupil learning; provide access to specialist expertise; and invest financially in professional learning.

Bell et al. (2010) found that institutional support was key to the success of initiatives involving teachers in action research projects. They highlighted the need for schools/leaders to be knowledgeable about the professional development opportunities afforded by action research and to be aware of the importance of support during the implementation of an action research study (particularly during the data analysis phase).

5.2 The role of the wider system in supporting school leaders

Pedder et al. (2010) argue that despite England having been a front-runner in terms of demands to make research more useful and usable for education policy and practice and in initiatives to support research use by educators, this has not been supported by an overarching strategic approach or system focus. If school leaders are to use evidence for school improvement, they need to be supported by the rest of the education system.

Campbell and Levin (2012) argue that it is feasible to improve the culture and capacity for research use across an education system if the following features are developed:

- Organised processes (such as training and networking) to develop and maintain the capacities and skills to find, understand, share and act on research among teachers, school leaders and other parts of the system;
- Initial teacher training which includes development of students' skills in research use and implementation;
- Leadership support for research use at all levels – leaders who value research, model and facilitate research use and provide supports and resources;
- Infrastructures within schools and other organisations which support research; for example, by having someone identified as a research lead;
- Research use embedded in the day-to-day work of the organisation; for example via discussion in staff meetings, professional learning communities and/or teacher collaboration;
- Strong links among people in local and national organisations which support research use and enable transfer of knowledge across the system as a whole;
- Tools to support research use being made available throughout the education system so that these do not have to be re-invented in every school.

Campbell and Levin's model, shown in Table 2, highlights the role of both researchers and users of research, but also suggests that a third, intermediary, role is important. Intermediaries (or mediators) can play a critical role in making the connections between research production and use, by supporting the process of finding, understanding, sharing and acting on research evidence. Intermediaries may take a variety of forms such as, research centres, think tanks, lobby groups, charities, professional organisations, public and private providers of professional development, parent groups and publishers of paper and electronic media.

Table 2: Effective knowledge mobilisation requires collaboration

	Researchers	Mediators	Practitioners
Find	<p>Research is made publicly available and not confined to peer-reviewed journals.</p> <p>Attention is paid to how results will be made accessible at all stages of the research process.</p>	<p>Research synthesised and summarised in one place and made freely available.</p> <p>Research findings are included in professional resources and materials.</p>	<p>Teachers and school leaders have the skills to identify research needs and find relevant research resources.</p> <p>Teachers and school leaders have the time and resources to look at research, perhaps with a member of staff designated the 'knowledge lead'.</p>
Understand	<p>Research written in an accessible form without jargon.</p> <p>The implications of research for practice are clearly outlined.</p>	<p>Implications of research for practice are clearly explained to teachers, parents, governors and the media. Findings are synthesised and inconsistencies are explained.</p> <p>Training and support for leaders using research is provided.</p>	<p>Initial teacher education and professional development equips teachers and leaders with the skills to be able to assess and interpret research.</p> <p>Time is allocated to discussing applications of research in all staff meetings.</p>
Share	<p>Researchers share their findings widely, including at conferences, training events, online and social media.</p> <p>Practitioners can influence research agendas and approaches.</p>	<p>Local and national organisations, including charities, unions, the media, academy chains and local authorities share evidence.</p> <p>Mediators ensure that lessons from research travel between schools and across the education system.</p>	<p>Experiences with research can be shared between and within schools (e.g. between departments).</p> <p>Staff have time to attend external events and have time to share and embed knowledge on return.</p>
Act	<p>Research makes explicit its implications for practice, what the pitfalls may be, and which elements should (and should not) be adapted.</p>	<p>Benefits of using research evidence are clearly explained to different teachers, parents, governors.</p> <p>Schools are supported when embedding research.</p> <p>Examples of school and classroom approaches to acting on research are identified and shared.</p>	<p>Schools develop a culture and practices that value, demand and act on research in their work.</p> <p>Schools have the freedom to make research-based decisions.</p> <p>Staff have time and resources necessary to embed research and evaluate impact in their own context.</p>

Source: Campbell and Levin, 2012

5.3 Summary of leadership strategies for building an evidence-informed school

From the research reviewed here we can define an evidence-informed school as one that:

- investigates key issues in teaching and learning;
- uses enquiry for staff development;
- turns data and experience into knowledge;
- uses evidence for decision making;
- promotes learning communities.

Sharp et al. (2006)

In addition, it is possible to identify the key features of schools that successfully implement evidence-based practice. These include having: shared values and expectations about children, learning and teaching; a collective focus on student learning; collaboration which includes sharing expertise; habits of inquiry and reflection (Earl, 2005; Hattie, 2005; Boudett, 2006).

Leaders are critical to developing these school characteristics and the research reviewed here suggests that the strategies they can most effectively employ in order to do so are likely to be as follows:

5.3.1 Model being an evidence based practitioner and decision-maker

For a leader to encourage greater research use in their school, arguably an important starting point is for them to be demonstrably evidence-based themselves. Bell et al. (2010) suggest that school leaders can model engagement in and with research as a tool for tackling a particular aspect of school improvement, by, for example explicitly asking colleagues for evidence about the potential effectiveness of their approaches and ideas.

Thomas and Pring (2004) suggest that anyone wanting to exemplify an evidence-based approach to problem solving or improving outcomes needs to work through the following questions:

- What are we dealing with? What is the issue here?
- What baseline data do we have?

- What do we know already know about effective solutions?
- What tools will we use to find out more (do we have these tools or do we need to access/develop them?)
- What is our plan? (e.g. people, processes, milestones, performance measures, timelines, costs)
- How do we gain buy-in (student, parent, school community)? How do we identify and overcome challenges?
- How do we interpret and assess the data?
- How do we disseminate the outcomes of the process?
- Is there evidence of progress? What should we do now?

5.3.2 Create a learning culture that integrates the use of research into staff development

Barber and Mourshed (2007) outlined four principles for leaders in developing teacher quality:

- Equip and train teachers to use meta-cognitive skills to improve their practice and encourage research-based teaching improvement;
- Provide well trained professional development coaches who can support the improvement of in-class practices;
- Underpin with a comprehensive and clear set of competencies with clear descriptors of progressive levels of ability and ways to improve; and
- Proactively support and encourage collaboration between professionals and facilitate dialogue and debate around learning strategies and outcomes.

5.3.3 Support staff involvement with and in research

Levin (2010) outlines the following strategies for school leaders aiming to support their staff to use research:

- Building consideration of research into the regular routines, systems and processes of a school through discussion at staff meetings, circulating research papers, posting summaries on staff noticeboards and newsletters, automatic consideration of research evidence when a policy is being developed or revised.
- Building research into all professional development activities – so the current knowledge base and how that might be implemented in the classroom/school is at the heart of all events.

- Ensuring someone ‘owns’ the task of paying attention to relevant research on behalf of the school and defining a ‘research liaison’ role to an enthusiast. Coburn and Talbert (2009) found that the existence of such specified roles was one of the strongest factors associated with higher levels of research use.

5.3.4 Cultivate and make use of external support

A further strategy identified by Levin (2010) is for school leaders to build collaboration and partnerships with external sources of support. This might include informal relationships with researchers around discussions of concern – Levin argues that practitioners attending research conferences and vice-versa should be commonplace, pointing out that whilst fully-fledged research partnerships may be difficult and time-consuming, this kind of engagement is not.

Bell et al. (2010) also emphasise the importance of both peer collaboration (including joint planning, discussion and reflection, joint workshops and feedback sessions) and external assistance. They highlight the role of external ‘critical friends’: good facilitators who can offer feedback, guidance, resources and tenacity. Effective support from researchers included modelling of practice and training as well as technical support.

The current emphasis on the generation of new and robust evidence in education (Goldacre, 2013) suggests that it is also important for school leaders to be ready to participate in larger studies in order to add more substantially to the future evidence-base. This will require the further development of collaboration between schools themselves as well as between schools and research institutions and funders. School leaders play a crucial role in this regard but they cannot build partnerships on their own. Such collaboration needs support across the whole education (and research) system.

6. Implications for the evidence-based school leader

An evidence-based school leader will:

Understand the role of research evidence alongside the other kinds of knowledge available to them.

Be aware of the kinds of research that can be used to address different issues and questions. They will make use of research that provides information on the needs of their student population as well as research which provides evidence of effectiveness. They will understand that some studies have greater validity than others in indicating what works, and they will give due priority to collecting and analysing evaluative information to assess their own school's progress.

Understand the different levels of research use and ensure that their school makes use of all three, by encouraging staff to use research findings to inform practice; supporting teachers in carrying out their own research where appropriate; and being proactive in involving their school in larger-scale studies.

Be aware of the barriers to research use and ways they can be overcome. They will use their role as leaders to:

- Model being an evidence-based practitioner and decision-maker;
- Create a learning culture that integrates the use of research into staff development;
- Support staff involvement with and in research;
- Cultivate and make use of external support;
- Proactively seek opportunities to involve their school in larger studies.

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